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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,006

08/28/2006

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EXAMINER

BELOUSOV, ALEXANDER

ART UNIT

PAPER NUMBER

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07/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,006	Applicant(s) TORII, KATSUYUKI	
	Examiner ALEXANDER BELOUSOV	Art Unit 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-11 is/are pending in the application.
- 4a) Of the above claim(s) 7-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/14/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the amendment filed on 04/14/2009. Currently, claims 1-4 have been examined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/14/2009 has been entered.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 04/14/2009. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Examiner's Note: from the Remarks/Arguments presented by the Applicant and from examining the claim amendment, it appears that the Applicant has amended the claims in the general fashion that was discussed in the previous Interview. However, on closer inspection, the amendment appears to be insufficiently precise and resulted in a new rejection (see 112 2nd paragraph rejection below).

Also, a reevaluation of the Torii reference has yielded a new way to interpret it in light of the claim amendment (see 102(b) rejection below). Therefore, even though the 112 2nd paragraph issue in the claim amendment technically makes the claim impossible to understand, the Examiner was able to evaluate the claim in a fashion which the Examiner *thinks* the

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Applicant has truly intended. Therefore, forward progress in the prosecution of the application is made.

On a separate topic, the Examiner has reevaluated the fundamental wording of some of the features of claim 1 having to do with “first electrode”, and this resulted in a brand new 112 1st paragraph rejection. From a technical point of view, the wording suggests something called “trench gate”, which is definitely not something that the Applicant describes in the elected embodiment or in the application as a whole.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 1-4** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1, in part states (with reference numbers from FIG. 4 included): “a first electrode (33) formed ***in a surface region*** of said second semiconductor region (13) ***sandwiched between*** said first semiconductor region (11) and said third semiconductor regions (14)”. There is a lack of written description for at least two different features of the above claim limitations.

There is no written description of the electrode (33) formed ***in a surface region*** of said second semiconductor region (13). As can be clearly seen from FIG. 4, the electrode does **not**

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contact said second semiconductor region, and therefore can not be physically formed “in a surface region” of it. Perhaps the claim limitations of “a first electrode formed *directly above* ...” would be a better way to describe the Applicant’s invention.

There is no written description of the electrode (33) *sandwiched between* said first semiconductor region (11) and said third semiconductor regions (14). As can be clearly seen from FIG. 4, the electrode is **above** the semiconductor regions and therefore can not be physically “sandwiched between” them (Webster: “to insert or enclose between usually two things of another quality or character”).

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claim(s) 1-4** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 contains claim limitations of “wherein: *a* first region”, indicating that there is only one “first region”. Claim 1 also contains claim limitations of “so as to enclose said *one of* first regions”, clearly indicating that there is a plurality of first regions. The two statements are in clear contradiction to each other, and therefore the claim can not be understood as written.

The Examiner assumes that the Applicant has made some sort of typo while attempting to fix the previously cited 112 second paragraph issue. In general, the Examiner would recommend that the Applicant avoid such similar wording as “a first region” and “a first semiconductor region” for the sake of clarity.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim(s) 1-4** are rejected under 35 U.S.C. 102(b) as being anticipated by (JP-2004-228553) by Torii et al (“Torii”).

Regarding claim 1, Torii discloses in FIG. 2 and related text (official translation is included with this action), **e.g.**, a semiconductor device, comprising:

a semiconductor base (11-14) comprising a first semiconductor region (11) having a first conductivity type, a second semiconductor region (13) having a second conductivity type formed in a specific surface region of said first semiconductor region (it is *specific*, because it is formed only in a specific part of the first semiconductor region), and a plurality of third semiconductor regions (14) having the first conductivity type formed in a specific surface region of said second semiconductor region (it is *specific*, because it is formed only in a specific part of the second semiconductor region); and

a first electrode (31) formed in a surface region of said second semiconductor region sandwiched between said first semiconductor region and said third semiconductor regions,

wherein: a first region (see FIG. 1(b); it shows 24 different 14 regions; the "first region" is the inner 4 in the second and third rows), in which one of said third semiconductor regions exhibiting a first surface area (see FIG. 1(b); specifically, it is a second 14 from the left, in the second row; it is one of the *smaller* 14's), is formed at a center of said semiconductor base, and

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a second region (the "second region" is the bottom row of 14's, the top row of 14's and the outer ones in the second and third rows), in which another of said third semiconductor regions (see FIG. 1(b); specifically, it is a first 14 from the right, in the bottom row; it is one of the **larger** 14's) exhibits a second surface area larger than said first surface area, is formed at a circumference of said semiconductor base so as to enclose said one of first regions.

Regarding claim 2, Torii discloses in FIG. 2 and related text, **e.g.**, there are a plurality of said third semiconductor region (14), which are formed to be spaced from each other.

Regarding claim 3, Torii discloses in FIG. 2 and related text, **e.g.**, said second semiconductor region (13) is formed in a belt shape (see FIG. 1(b)).

Regarding claim 4, Torii discloses in FIG. 2 and related text, **e.g.**, a plurality of said second semiconductor region (13), which are formed side by side with a space therebetween (see FIG. 1(b)).

Response to Arguments

1. Applicant's arguments with respect to above claims have been considered but are moot in view of the new ground(s) of rejection. The Examiner has made a brand new rejection using the same art, and has also included new 112 1st and 112 2nd rejections in this Action.
2. The rest of Applicant's Arguments are moot in light of new grounds for rejection.

Conclusion

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Belousov whose telephone number is 571-270-3209. The examiner can normally be reached on Monday - Thursday 7:30AM - 5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander Belousov/
Examiner, Art Unit 2894
07/06/2009

/Bradley K Smith/
Primary Examiner, Art Unit 2894